Amendments to the Claims

This listing of claims will replace all prior versions, and listings of claims in the application.

1-36 (cancelled)

37. (Currently amended) A spatial light modulator configured to receive an incident wavefront, comprising:

a continuous solid and substantially rigid substrate having a surface; and

a plurality of individual actuators formed on the surface of the substrate and separated laterally from one another thereby forming a two dimensional array, each of the individual actuators having a mirror formed on an actuator element section, the actuator element section including an actuator element that is sandwiched by a pair of electrodes,

wherein for each of the individual actuators, the mirror is formed so that when the electrode pair is energized the individual actuator moves the mirror with respect to the surface of the substrate, such that the incident wavefront is <u>received by the mirrors normal to the substrate and is</u> modulated <u>across the two dimensional array of mirrors</u> to produce an output wavefront <u>having at least one of a phase shift or an interference pattern in the output wavefront</u>.

38. (Currently Amended) The spatial light modulator of claim 37, wherein the individual actuators are configured to move the mirrors in two <u>or four</u> directions to modulate the incident wavefront.

39. (Cancelled)

40. (Previously Presented) The spatial light modulator of claim 37, wherein one electrode in each of the pairs of electrodes is formed between the individual actuator and the substrate and includes a plurality of spaced apart electrode portions.

41. (Previously Presented) The spatial light modulator of claim 40, wherein the plurality of spaced apart electrode portions are configured to allow the individual actuators to tilt the mirrors to modulate the incident wavefront.

42. (cancelled)

43. (Previously Presented) The spatial light modulator of claim 37, wherein adjacent ones of the individual actuators have different heights.

44. (Previously Presented) The spatial light modulator of claim 37, wherein the individual actuators move the mirrors about one-quarter of a wavelength of light in each direction to modulate the incident wavefront.

45. (Previously Presented) The spatial light modulator of claim 37, wherein the individual actuators are configured such that the mirrors form an overall curved shape.

46. (Previously Presented) The spatial light modulator of claim 37, wherein the mirrors are positioned in default positions at varying heights with respect to a plane formed by the surface of the substrate, such that varying output wavefront patterns are generated by the incident wavefront reflecting therefrom.

47-49 (Cancelled)

50. (Currently Amended) The spatial light modulator of claim 37, further comprising:

a plurality of coupling devices that couple individual actuators;

wherein, through the plurality of coupling devices, the individual actuators are connected to each other, such that movement of each of the individual actuators is

controlled with respect to each other to form an overall desired reflecting configuration of the mirrors to modulate the incident wavefront.

51. (Cancelled)

52. (Previously Presented) The spatial light modulator of claim 37, further comprising:

an insulating layer coupled to the substrate that dissipates heat generated by the pairs of electrodes.

53. (Previously Presented) The spatial light modulator of claim 37, wherein the pairs of electrodes are energized to cause a material of the individual actuators to expand and contract to move the mirrors in a plurality of directions relative to a longitudinal axis of each of the individual actuators, wherein the movement causes a reflecting surface of the mirrors to become unparallel to a plane parallel to the surface of the substrate to modulate the incident wavefront.

54. (Currently Amended) A method of forming a spatial light modulator that receives an incident wavefront and modulates the incident wavefront, comprising:

forming a plurality of individual actuators including actuation element sections on a surface of a continuous solid and substantially rigid substrate, the plurality of individual actuators being separated laterally from one another thereby forming a two dimensional array;

forming electrodes at opposite ends of each respective actuator element in each respective one of the actuator element sections; and

forming a mirror on each of the individual actuator sections;

<u>wherein for each of the individual actuators, the mirror is formed so that when the electrode pair is energized the individual actuator moves the mirror with respect to the surface of the substrate, such that the incident wavefront is received by the mirrors normal to the substrate and is modulated across the two dimensional array of</u>

mirrors to produce an output wavefront having at least one of a phase shift or an interference pattern in the output wavefront.

~~wherein, for each of the individual actuators, the mirror is formed so that when the electrode pair is energized the individual actuator moves the mirror with respect to the surface of the substrate, such that the incident wavefront is modulated to produce an output wavefront.~~

55. (Currently Amended) A method, comprising:

receiving an incident wavefront on a two dimensional array of mirrors; and

moving respective ones of the mirrors through energizing of electrode pairs formed at opposite ends of corresponding actuator elements in corresponding ones of actuator element sections of corresponding ones of a plurality of individual actuators formed on a surface of a continuous solid and substantially rigid substrate and separated laterally from one another, thereby forming a two dimensional array of the individual actuators, each of the actuator element sections is coupled to a corresponding one of the mirrors,

wherein when selected ones of the electrode pairs are energized respective ones of the individual actuators move respective ones of the mirrors with respect to the surface of the substrate, such that the incident wavefront is received by the mirrors normal to the substrate and is modulated across the two dimensional array of mirrors to produce an output wavefront having at least one of a phase shift or an interference pattern in the output wavefront.

56. (New) A spatial light modulator, comprising:

a substrate having a surface;

a plurality of individual actuators formed on the surface of the substrate and separated laterally from one another thereby forming a two dimensional array, each of the individual actuators having a mirror formed on an actuator element section, the

actuator element section including an actuator element made of actuator material that is sandwiched by a pair of electrodes; and

a plurality of coupling devices, each made from the actuator material, that are configured to couple respective adjacent ones of the individual actuators, such that, through use of the plurality of coupling devices, movement of one of the respective adjacent ones of the plurality of individual actuators affects movement of other ones of the respective adjacent ones of the plurality of individual actuators so that they are controlled as a group to form an overall desired reflecting configuration for the group to modulate an incident wavefront.

57. (New) The spatial light modulator of claim 56, wherein the individual actuators are configured to move the mirrors in two or four directions to modulate the incident wavefront.

58. (New) The spatial light modulator of claim 56, wherein one electrode in each of the pairs of electrodes is formed between the individual actuator and the substrate and includes a plurality of spaced apart electrode portions, wherein the plurality of spaced apart electrode portions are configured to allow the individual actuators to tilt the mirrors to modulate the incident wavefront.

59. (New) The spatial light modulator of claim 56, wherein adjacent ones of the individual actuators have different heights.

60. (New) The spatial light modulator of claim 56, wherein the individual actuators move the mirrors about one-quarter of a wavelength of light in each direction to modulate the incident wavefront.

61. (New) The spatial light modulator of claim 56, wherein the individual actuators are configured such that the mirrors form an overall curved shape.

62. (New) The spatial light modulator of claim 56, wherein the mirrors are positioned in default positions at varying heights with respect to a plane formed by the surface of the substrate, such that varying output wavefront patterns are generated by the incident wavefront reflecting therefrom.

63. (New) The spatial light modulator of claim 56, wherein the plurality of coupling devices are configured such that the movement of one of the respective adjacent ones of the plurality of individual actuators generates at least one of a phase shift or an interference pattern in the output wavefront.

64. (New) The spatial light modulator of claim 56, further comprising:

an insulating layer coupled to the substrate that dissipates heat generated by the pairs of electrodes.

65. (New) The spatial light modulator of claim 56, wherein the pairs of electrodes are energized to cause the actuator material of the individual actuators to expand and contract to move the mirrors in a plurality of directions relative to a longitudinal axis of each of the individual actuators, wherein the movement causes a reflecting surface of the mirrors to become unparallel to a plane parallel to the surface of the substrate to modulate the incident wavefront.

66. (New) A method of forming a spatial light modulator, comprising:

forming a plurality of individual actuators including actuation element sections on a surface of a substrate, the actuator element sections each including an actuator element made out of actuation material, the plurality of individual actuators being separated laterally from one another thereby forming a two dimensional array;

forming electrodes at opposite ends of each respective actuator element in each respective one of the actuator element sections;

forming a mirror on each of the individual actuator sections; and

forming a plurality of coupling devices, each made from the actuator material, that are configured to couple respective adjacent ones of the individual

actuators, such that, through use of the plurality of coupling devices, movement of one of the respective adjacent ones of the plurality of individual actuators affects movement of other ones of the respective adjacent ones of the plurality of individual actuators so that they are controlled as a group to form an overall desired reflecting configuration for the group to modulate an incident wavefront.

67. (New) A method, comprising:

receiving an incident wavefront on a two dimensional array of mirrors; and

moving respective ones of the mirrors through energizing of electrode pairs formed at opposite ends of corresponding actuator elements in corresponding ones of actuator element sections of corresponding ones of a plurality of individual actuators formed on a surface of a substrate and separated laterally from one another, thereby forming a two dimensional array of the individual actuators, each of the actuator element sections is coupled to a corresponding one of the mirrors, each of the actuator element sections including an actuator element made of actuator material,

wherein when selected ones of the electrode pairs are energized respective ones of the individual actuators move respective ones of the mirrors with respect to the surface of the substrate,

wherein, based on a plurality of coupling devices, each made from the actuator material, that are configured to couple respective adjacent ones of the individual actuators, such that movement of one of the respective adjacent ones of the plurality of individual actuators affects movement of other ones of the respective adjacent ones of the plurality of individual actuators so that they are controlled as a group to form an overall desired reflecting configuration for the group to modulate an incident wavefront.